MODULE 2–NORTH AMERICAN VEHICLE MAKERS

A-2v: Video: Tech-Trends Trivia
This vehicle brand's logo is the coat of arms of a French military commander and explorer who founded Detroit. (pause) Cadillac

A-4v: Video: 2013 Dodge Dart
(HOST) The 2013 Dodge Dart replaces the Dodge Caliber. It is the first Chrysler Group vehicle based upon the Fiat architecture. Various grades of high-strength steel make up over two-thirds of the body structure. The front bumper reinforcement and bolt-on crush boxes are aluminum.

This cutaway of the Dart shows the unique construction feature in the front. There are three front rails. We talked to a design engineer at Dodge who told us about this design construction.

(CYRIL BENITAH) So what we have here is part of the architecture that we benefited from with the Alfa Romeo Giulietta. Looking at the load paths upfront, we have actually three levels of load paths. We have what's really traditional, which is the main load beam that we see up here. That's tied along the hinge pillar. Then we have the main rail, which is the black rail you see there. Of course every car has that, that's what really takes up most of the energy during any kind of impact event. Then what we have that's a bit unique and very helpful for this car, is the tertiary load path, what we call the third load path beam, which is down there at the bottom. Right in front of that is a crush can. So it helps overall, between the three, to manage low-energy as well as high-energy impacts most effectively. In fact, as you can see, the third load path has some crush beams, and in a low-energy event, theoretically, the beam itself could be unbolted and replaced by another beam if the suspension components haven't been harmed. It's tied with the double shear joint, as you can see, and it's straight through with the crush can at the front which is effectively an extruded aluminum piece.

(HOST) The roof is laser-brazed on. A combination of spot welds and adhesive, or weld bonding, is the norm on all pinchweld locations on the side apertures.

Some of the mechanical features on the Dart include an active grille shutter system, a first for Dodge, which automatically opens and closes several shutters behind the grille, reducing drag and increasing fuel efficiency.

There are ten standard airbags, including both driver and passenger knee airbags.

One note on this cutaway, this is the turbo-charged version and the intercooler is

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really low and upfront, right behind the bumper reinforcement, and this will likely need attention after a front collision.

B-1v: Video: Tech-Trends Trivia
This model holds the title of best selling vehicle of all time. (pause) Toyota Corolla, first sold in 1966 and currently sold 37.5 million cars. Second place, Ford F-150: 35 million sold.

C-1v: Video: Tech-Trends Trivia
Who owns the first regular production Corvette ZR-1, VIN 0001? (pause) Jay Leno

C-5v: Video: 2013 Cadillac ATS
New to Cadillac this year is the ATS, a vehicle designed to compete with the BMW 3 Series, the Audi A4, and the Mercedes C-Class. Aluminum is in the hood, the instrument panel beam, engine cradle, and various parts of the engine. Moving into the center section, the crosscar beam is made from ultra-high-strength steel, as well as other various parts of the safety cage. Adding up all these lightweight savings makes the car 500 pounds lighter than its predecessor, the CTS. Another feature that this vehicle has that is shared by other models, is the active grille shutters that are programmed to close at preset highway speeds. This reduces drag and increases fuel efficiency.

C-10v: Video: E-Assist "Hybrid"
Gone is the belt/alternator system for General Motors, the so-called BAS mild hybrid system. Taking its place is the eAssist, such as is found on here, the 2013 Chevrolet Malibu.

The system is called e-assist because there's a compact electric motor where the alternator normally sits. The motor can start the vehicle from a dead stop, and gives the gasoline engine a little extra "oomph" when accelerating.

Though GM is avoiding the "H" word, not calling this a hybrid system, all of the hybrid elements are here. There's the electric motor, powered by a lithium-ion battery pack in the trunk that produces 115 volts. The battery is recharged while driving via regenerative braking. And there's a start/stop feature that allows the engine to completely shut off when the vehicle comes to a stop.

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Vehicles with eAssist are also equipped with active grille shutters that electronically close at higher speeds to push more air over the vehicle, and also low-rolling resistance tires.

C-11v: Video: Tech-Trends Trivia

This car was to be called the "Panther," but just prior to manufacture, the vehicle maker changed the name. What did they change it to? (pause) Chevrolet Camaro

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